

SYSTEMATIC DOCUMENTATION-KEY TO IMPROVE CONTACT FOLLOW-UP: REVIEW OF PROGRAMME STRATEGY OF CHEMOPROPHYLAXIS FOR HOUSEHOLD CONTACTS OF LEPROSY PATIENTS, TIRUVALLUR DISTRICT, TAMIL NADU, INDIA, 2023

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ABSTRACT

INTRODUCTION : Analysis of five-year data of National Leprosy Eradication Programme in Tiruvallur district of Tamil Nadu revealed fluctuating annual new leprosy case detection, poor detection through contact tracing and no evaluation since implementation. In view of this, we evaluated the extent of implementation of the National Leprosy Eradication Programme (NLEP)'s strategy of chemoprophylaxis with single dose rifampicin to close contacts of leprosy during June to August, 2023.

METHODS : Using log frame matrix, we framed input, process and output indicators and collected data through cross-sectional study across 45 health facilities. We interviewed 25 health staff implementing the programme, 57 index case-patients and their 147 household contacts. We extracted data from programme documents, reports and records generated by the district leprosy office. We obtained data on trained health care workers; availability of registers and rifampicin, information, education and communication (IEC) materials and allocated funds for drug procurement.

RESULTS : Chemoprophylaxis with single dose rifampicin was 100 % accepted among household contacts. Majority of the programme staff received necessary training (78% of medical officers; 64% of other healthcare workers). They reported challenges such as the absence of contact registers and rifampicin stock at healthcare facilities. They enrolled 92% of index cases, screened all their household contacts to identify 91% of them eligible for prophylaxis. They provided rifampicin for 94% of them and none reported adverse events. IEC materials were displayed in 93% of the surveyed health facilities. In order to enhance the effectiveness of prophylaxis strategy, we recommend implementing systematic documentation by health staff for tracking contact follow-up and considering chemoprophylaxis to social and neighbourhood contacts.

CONCLUSION: The chemoprophylaxis with single dose rifampicin to leprosy contacts was well accepted among leprosy affected persons and their household contacts after explaining the reduction of risk associated. The strategy of contact tracing followed by administration of single dose rifampicin is feasible and cost-effective.

KEYWORDS : Leprosy, Neglected disease, Chemoprophylaxis, Mycobacterial infection

INTRODUCTION

Leprosy is one of the neglected tropical diseases, caused by a bacteria called *Mycobacterium leprae*. Targeted for interruption of transmission by 2030⁴, leprosy continues to pose a risk, particularly among household contacts who experience an eightfold higher likelihood of contracting the disease. Chemoprophylaxis with single dose rifampicin reduces the incidence of leprosy among close contacts by 57%.¹

The World Health Assembly target of reducing the prevalence to less than one case per ten thousand population was reached globally in 2000 and at the national level by 2005. Leprosy services were integrated into general health care services to enhance the reach of services through primary health care, improve cost-effectiveness and promote

inclusion. However, the detection of new cases reduced at a rate of 2% per year. Visible deformities at the time of diagnosis as well as childhood leprosy continue to occur, highlighting the need for high-impact preventive initiatives to bend the case-detection curve and reduce leprosy-associated disabilities. Prolonged contact with untreated leprosy patients is known to spread infection. The screening of contacts and the provision of prophylactics are crucial to break the chain of transmission. Based on available evidence, prophylaxis



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with single-dose rifampicin, administered to household, neighbourhood and social contacts, prevents leprosy. Secondary data analysis of Tiruvallur district, Tamil Nadu, India highlighted fluctuating annual new case detection rate (ANCDR) (7.5-5.5/million) and above state and national level since 2011 with poor case detection through contact surveys. In order to improve case detection among contacts and understand the gaps in implementation of post-exposure prophylaxis with single dose rifampicin, program evaluation of this strategy was done. The objectives of this study were to describe the implementation of post-exposure prophylaxis with single dose rifampicin for leprosy contacts and to also evaluate the extent of its implementation into routine NLEP activities in Tiruvallur district, Tamil Nadu, India as per WHO guidelines.

METHODS

We conducted a cross-sectional study involving study participants who are the healthcare workers at the provider level and leprosy patients and their household contacts at the beneficiary level after obtaining consent and assuring confidentiality. We conducted the study from June 2023 to August 2023 using January 2023 to May 2023 as the reference period. The operational definitions² used in the study are: **Post-exposure prophylaxis (PEP):** Administration of single dose rifampicin as post-exposure prophylaxis to close contacts of newly diagnosed leprosy patient. **Index patient:** Any person diagnosed with leprosy for the first time. **Close Contact:** a person in contact with an index patient for 20 hours per week for at least three months in a year, e.g. family members, neighbours, friends, school children in same class or co-workers in same office. **Household contact:** contact living in the same dwelling or sharing the same kitchen with an index patient. This includes family members and also domestic staff or aids or co-workers or others sharing the same accommodation. A family member living elsewhere should not be considered as a household contact. **Neighbourhood contact:** a person living in the adjacent household or within 100 metres of an index patient. **Social contact:** other persons having prolonged contact with an index patient and who are not classified as household or neighbourhood contact. These may include friends, persons sharing workplace or school. To describe the strategy, we gathered information from the WHO technical guidance for contact tracing and post-exposure prophylaxis and Strategy guidelines from National Leprosy Eradication Programme (NLEP). We extracted data on the relevant guidelines, government orders issued, registers and records maintained at the district level such as drug stock

registers, monthly progress reports, contact survey reports and annual reports compiled from sub-districts using data extraction forms. We reviewed the monthly progress reports, treatment registers, drug stock registers and treatment cards maintained at the primary health centres during visit to the 45 health facilities with the health facility checklist.

Key Informant Interviews (KII) were conducted using semi-structured questionnaires among a total of 69 healthcare providers including the state leprosy officer at the state level, the district leprosy officer at the district level, 45 primary health centre Medical Officers, 12 Non-Medical Supervisors (NMS) and 10 Health Inspectors (HIs) at the sub-district level. The beneficiary survey was conducted among 57 index patients and their 147 household contacts using structured questionnaires as per the interview guidelines.

We derived three component objectives for the post-exposure prophylaxis strategy from the existing WHO technical guidance 2018 and strategy guidelines from the National Leprosy Eradication Programme which were (i) systematic tracing of contacts; (ii) active case finding by screening of contacts; (iii) prophylactic treatment of eligible contacts with single dose rifampicin (SDR). We used a log frame matrix (Table 1) for the purpose of evaluation and framed indicators using inputs, process, outputs for each of the component objective for achieving an outcome of reduction in the risk of developing leprosy among household contacts and the goal of interruption of leprosy transmission as depicted in Table 2 and 3.

RESULTS

From January to May 2023, out of 62 index patients identified from treatment registers, 57 were included in the study (one patient had died, one was from another state, and three had no contacts). For these 57 index patients, 147 household contacts were identified and line listed, all of whom were screened for leprosy.

Table 1: Log frame matrix for program evaluation of post-exposure prophylaxis for household contacts of leprosy, Tiruvallur district, Tamil Nadu, India, 2023

Goal	Interruption in leprosy transmission		
Outcome	Reduction in risk of developing leprosy among household contacts		
Component objectives	Systematic tracing of contacts	Active case finding by screening of contacts	Prophylactic treatment of eligible contacts with SDR PEP*
Outputs	All household contacts line listed for screening	All line listed household contacts screened	Eligible household contacts taken SDR-PEP
Process	Enrolment of index cases Contact tracing of household contacts	Screening of household contacts Maintaining records Displaying IEC materials	Counselling to household contacts for SDR-PEP
Inputs	Trained staff Treatment registers/cards	Trained staff Case validation team Availability of IEC material	Drug stock of rifampicin Availability of contact registers

*SDR-PEP – Single dose rifampicin post-exposure prophylaxis

During the screening, 11 new leprosy patients were detected among the household contacts, two old treated multibacillary leprosy patients were identified and two contacts were found to be pregnant.

Beneficiary survey - Overview

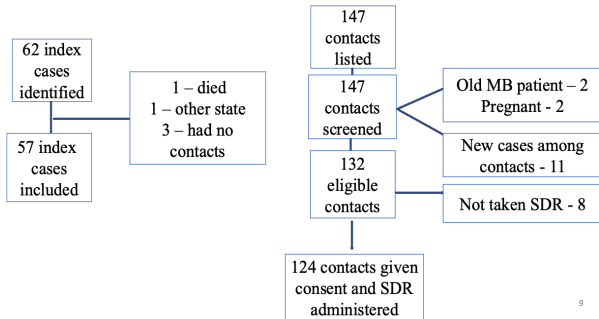


Figure 1: Flow Diagram – Beneficiary Survey

Consequently, 132 contacts (91%) were found eligible for post-exposure prophylaxis. All 132 eligible contacts received counselling about post-exposure prophylaxis, while eight refused to take the single dose rifampicin, 124 contacts (93%) accepted and took the prophylactic treatment (Figure 1).

Table 2: Input and process indicators used for program evaluation of post-exposure prophylaxis for household contacts of leprosy, Tiruvallur district, Tamil Nadu, India, 2023

Input Indicators	n	N	%
Trained medical officers in leprosy	35	45	78
Trained healthcare workers	14	24	64
Availability of case validation team	1	1	100
Availability of treatment registers/ cards	45	45	100
Availability of contact registers	0	45	0
Availability of rifampicin in health facilities	0	45	0
Availability of IEC materials in health facilities	45	45	0
Process Indicators	n	N	%
Enrolment of index patients	57	62	92
Awareness of healthcare workers on screening	20	24	83
Maintenance of treatment cards/registers	40	45	89
Utilization of IEC material	42	45	93
Identification of eligible household contacts	132	147	91
Counselling of eligible household contacts for SDR-PEP	132	132	100

During the interview conducted among the healthcare providers, we gathered information on training, field visits and leprosy services offered at the primary health centres. The district leprosy officer had not received training and among the 45 primary health centre (PHC) medical officers interviewed, 38 (78%) had received leprosy training. In rural areas, 10 out of 12 non-medical supervisors (NMS) (83%) were trained in leprosy. In urban areas, 4 out of 10 health inspectors (64%) had undergone leprosy training (Figure 2 and Table 2)

Provider and Health facilities survey - Overview

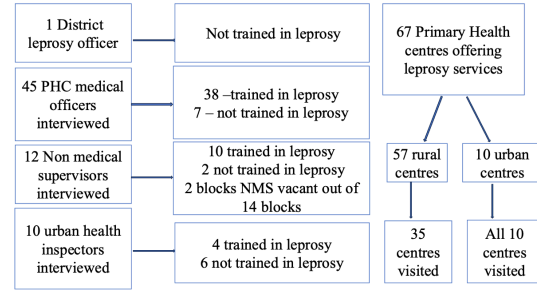


Figure 2: Flow diagram showing overview of provider and health facilities survey

A case validation team at the district level conducted at least one visit per sub-district each month to monitor program activities. Treatment cards and treatment registers were available at all the primary health facilities visited, and Information, Education, and Communication (IEC) materials were present in all facilities, with 93 percent displaying them (Table 2).

Table 3: Output indicators used for program evaluation for post-exposure prophylaxis for household contacts of leprosy, Tiruvallur district, Tamil Nadu, India, 2023

Output Indicators	n	N	%
Line listed household contacts	147	147	100
Line listed household contacts screened	147	147	100
Eligible contacts received SDR-PEP*	132	124	93

However, drug stocks of rifampicin were not maintained at any health facilities; instead, rifampicin was delivered directly to beneficiaries by healthcare workers after being received from the district office. No contact registers or line lists of contacts were maintained at the health facilities, instead, aggregate numbers of contacts were reported in the monthly progress reports from the sub-districts to the district office. From the interviews, it was found that 83% of the healthcare providers involved in screening were aware of the screening protocol, and 89% were aware of the procedures for maintaining treatment cards and registers. All the line listed contacts were screened for leprosy, out of which 93% of them received post-exposure prophylaxis with single dose rifampicin (Table 3).

DISCUSSION

The secondary data analysis of five years from 2017 to 2022 of NLEP pointed out poor detection through contact tracing stresses the need to do evaluation of this strategy. The chemoprophylaxis with single dose rifampicin to leprosy contacts was well accepted among leprosy affected persons and their household contacts after explaining the reduction of risk associated. The strategy of contact tracing followed by administration of single dose rifampicin is feasible

and cost-effective under the existing routine activities of the leprosy programme which is also well documented by previous studies done in Dadar Nagar Haveli.⁷

The study did have some limitations like information on whether adequate dosage was given as per WHO guidelines for different age groups and the timing of rifampicin after new case detection could not be assessed. More efforts are required for effective implementation of the strategy in the form of training of field staff for identification of contacts and screening for leprosy, monitoring of field staff, establishing documentation and maintaining logistics such as contact registers and drug stock of rifampicin at health facilities. The detection of new leprosy patients among screened contacts indicates ongoing transmission and recommends contact tracing crucial for early detection and intervention. The ease of administration of single dose rifampicin and the fact that no adverse events⁷ have been reported among the contacts so far has given a positive note on the strategy and emphasises the need for systematic documentation for effective implementation and further follow up of the contacts. The recommendations were to document a set of minimal essential data in the form of line-lists of contacts (currently maintained in monthly progress reports as aggregate numbers) in contact registers, to be recorded locally by the healthcare workers at the primary health centres and report periodically to the district as well to the state and national level authorities for a targeted approach towards interruption of transmission. We also emphasised the need for maintaining the drug stock of rifampicin at the primary health centres for prompt provision to the close contacts including those in the neighbourhood and workplaces.

DECLARATION OF INTEREST

The authors declare no conflict of interest

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